

What is claimed is:

1. A surveying instrument comprising:  
  
a sighting telescope optical system through which a sighting object can be sighted;  
  
a distance measuring system which measures a distance to said sighting object; and  
  
a phase detection autofocus system which detects a focus state of an image of said sighting object on a reference focal plane; and  
  
an AF driver which moves a focusing lens of said sighting telescope optical system to bring said sighting object into focus in accordance with an output of said phase detection autofocus system.
2. The surveying instrument according to claim 1, wherein said AF driver moves said focusing lens to bring said sighting object into focus in accordance with an output of said phase detection autofocus system without the use of a reflective device at a point of said sighting object.
3. The surveying instrument according to claim 1, further comprising a start button,  
  
wherein said distance measuring system and said AF driver operate consecutively upon a single-push operation of said start button.
4. The surveying instrument according to claim 1, further comprising a controller which provides a consecutive autofocus mode in which said sighting object is brought into focus automatically consecutively via said AF driver, and a consecutive

distance measurement mode in which said distance to said sighting object is consecutively measured via said distance measuring system;

wherein said consecutive autofocus mode starts at the same time said consecutive distance measurement mode is started.

5. The surveying instrument according to claim 1, further comprising a controller which drives said AF driver to move said focusing lens to a predetermined position thereof so that an object at a predetermined distance is in focus when said sighting object is unable to be brought into focus in the case of a measurement mode in which a target is set at an arbitrary point.

6. The surveying instrument according to claim 1, wherein said surveying instrument is a total station.

7. The surveying instrument according to claim 1, wherein said distance measuring system comprises a distance meter having a light-emitting element and a light-receiving element.

8. The surveying instrument according to claim 1, wherein said phase detection autofocus system comprises a pair of line sensors.